

Science Skills

DEFINITION

Science skills is the percentage of fifth-, eighth-, and eleventh-grade students who met expectations for science on the *Rhode Island Next Generation Science Assessment (NGSA)* test.

SIGNIFICANCE

Science education prepares students for postsecondary education and a wide variety of STEM (science, technology, engineering, and math) occupations, making them competitive candidates in a world that is increasingly technologically driven.¹ Compared to international peers, U.S. students fare well in science assessments designed to measure curricular learning, but the gap between highest- and lowest-performing students highlights the significant inequities in the U.S. science education system.²

Disparities in science skills are seen by family income, race/ethnicity, and urbanicity and are wider in the United States than in many similar countries. These disparities result in students who are less prepared for college admittance, more likely to drop out, and have more limited career opportunities, perpetuating the cycle of poverty.^{3,4} A contributing factor may be that teachers in schools with high percentages of Students of Color or high-poverty enrollment are more likely to have less teaching experience.⁵

Increasing income inequality in the United States may continue to exacerbate existing disparities in science skills, which continue through adulthood as science literacy gaps. Adults with low science literacy are more susceptible to misinformation, less competitive as employees, and less equipped to understand public policy issues related to health, climate, and the environment.^{6,7}

Improving science education for all students requires high-quality instructional materials, better use of open educational resources in addition to commercially available resources, ongoing, curriculum-based professional learning for instructors, and accurate depictions of what standards-aligned instruction should look like. These changes have the potential to close opportunity gaps in science by race and ethnicity.⁸

The *National Assessment of Educational Progress (NAEP)* measures proficiency in science and other subjects nationally and across states on a periodic basis.⁹ In 2015, 36% of Rhode Island fourth graders and 37% of U.S. fourth graders performed at or above the proficient level in science on the *NAEP*, and 32% of Rhode Island eighth graders and 33% of U.S. eighth graders performed at or above the proficient level in math on the *NAEP*.^{10,11}



Fifth-, Eighth-, & Eleventh-Grade Students Meeting Expectations on the Next Generation Science Assessment, Rhode Island, 2023

SUBGROUP	FIFTH GRADE	EIGHTH GRADE	ELEVENTH GRADE
Female Students	31%	27%	32%
Male Students	32%	29%	31%
*Multilingual Learners	<5%	<5%	<5%
Non-English Learners	36%	33%	35%
*Students Receiving Special Education Services	7%	6%	6%
Students Not Receiving Special Education Services	36%	33%	35%
Low-Income Students	17%	14%	15%
Higher-Income Students	46%	41%	41%
American Indian or Alaska Native Students	15%	13%	20%
Asian Students+	46%	37%	49%
Black Students	17%	12%	13%
Hispanic/Latino Students	16%	14%	14%
White Students	43%	39%	43%
Homeless Students	9%	7%	18%
Students in Foster Care	25%	8%	12%
ALL STUDENTS	32%	28%	31%

Source: Rhode Island Department of Education, *Next Generation Science Assessment (NGSA)- Science, 2022-2023*. Low-income status is determined by eligibility for the free or reduced-price lunch program. *Data is reported as <5% when more than 95% of students did not meet expectations. +Data for Asian students is not disaggregated by ethnic group. National research shows large academic disparities across Asian ethnic groups.

★ During the COVID-19 pandemic, the percentage of Rhode Island fifth graders meeting expectations in science declined from 32% in 2019 to 30% in 2021 and then increased to 32% in 2023. Eighth graders meeting expectations in science declined from 31% in 2019 and 2021 to 28% in 2023, while eleventh-graders rose from 31% in 2019 to 36% in 2021, falling back to 31% in 2023.¹²

★ In Rhode Island in 2023, 17% of low-income fifth graders met expectations in science, compared with 46% of higher-income fifth graders. There also were large disparities by race and ethnicity. Twenty-five percent of fifth graders, 8% of eighth graders, and 12% of eleventh graders in foster care met expectations in science in 2023.¹³

★ In order to graduate, Rhode Island students must demonstrate proficiency in science. Beginning with the Class of 2028, they will also be required to demonstrate proficiency in lab sciences.¹⁴

Table 48.

Fifth-, Eighth-, & Eleventh-Grade Students Meeting Expectations in Science, Rhode Island, 2022-2023

SCHOOL DISTRICT	# OF FIFTH GRADERS TESTED	% OF FIFTH GRADERS MEETING EXPECTATIONS	# OF EIGHTH GRADERS TESTED	% OF EIGHTH GRADERS MEETING EXPECTATIONS	# OF ELEVENTH GRADERS TESTED	% OF ELEVENTH GRADERS MEETING EXPECTATIONS
Barrington	237	62%	266	68%	265	62%
Bristol Warren	226	49%	207	49%	223	58%
Burrillville	139	27%	163	36%	158	32%
Central Falls	154	9%	209	<5%	149	9%
Charlho	196	53%	212	44%	229	51%
Coventry	317	40%	315	35%	273	32%
Cranston	724	31%	798	28%	754	30%
Cumberland	345	51%	336	53%	323	43%
East Greenwich	191	62%	215	54%	168	63%
East Providence	372	32%	387	22%	358	22%
Exeter-West Greenwich	131	42%	107	49%	123	50%
Foster	36	39%	NA	NA	NA	NA
Foster-Glocester	NA	NA	142	39%	221	49%
Glocester	100	57%	NA	NA	NA	NA
Jamestown	47	64%	40	60%	NA	NA
Johnston	232	22%	259	29%	171	14%
Lincoln	238	42%	253	44%	210	49%
Little Compton	19	74%	26	58%	NA	NA
Middletown	143	40%	157	37%	137	31%
Narragansett	66	42%	75	48%	137	46%
New Shoreham	7	*	9	*	4	*
Newport	131	17%	135	17%	132	21%
North Kingstown	239	53%	246	50%	309	55%
North Providence	253	29%	282	32%	229	25%
North Smithfield	124	35%	136	53%	120	42%
Pawtucket	622	17%	644	11%	447	14%
Portsmouth	158	58%	152	61%	173	70%
Providence	1,427	12%	1,493	10%	1,302	13%
Scituate	89	46%	85	29%	88	34%
Smithfield	161	42%	164	33%	150	41%
South Kingstown	175	49%	211	37%	175	55%
Tiverton	129	43%	124	39%	95	45%
Warwick	580	39%	610	21%	495	29%
West Warwick	238	7%	262	16%	221	24%
Westerly	163	39%	190	41%	157	38%
Woonsocket	406	12%	399	12%	230	17%
<i>Charter Schools</i>	<i>994</i>	<i>28%</i>	<i>704</i>	<i>23%</i>	<i>604</i>	<i>15%</i>
<i>UCAP</i>	<i>NA</i>	<i>NA</i>	<i>71</i>	<i><5%</i>	<i>NA</i>	<i>NA</i>
<i>YouthBuild</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>5</i>	<i>*</i>
<i>Four Core Cities</i>	<i>2,609</i>	<i>13%</i>	<i>2,745</i>	<i>10%</i>	<i>2,128</i>	<i>13%</i>
<i>Remainder of State</i>	<i>6,206</i>	<i>40%</i>	<i>6,564</i>	<i>37%</i>	<i>6,098</i>	<i>40%</i>
<i>Rhode Island</i>	<i>9,811</i>	<i>32%</i>	<i>10,089</i>	<i>28%</i>	<i>9,208</i>	<i>31%</i>

Source of Data for Table/Methodology

Data are from the Rhode Island Department of Education (RIDE), *Next Generation Science Assessment (NGSA)*, 2022-2023 and is rounded to the nearest percentage point.

% meeting expectations are students who met or exceeded expectations on the NGSA. Only students who actually took the test are counted in the denominator for the district and school proficiency rates. All students are expected to participate in the NGSA assessment. Students with significant disabilities may be eligible to participate in alternate assessments.

Data is reported as <5% when greater than 95% of students did not meet expectations in this category. Actual numbers are not shown to protect student confidentiality. *Data is suppressed to ensure confidentiality because the minimum reporting size requirement (10 students) is not met. These students are still counted in district totals and four core cities, remainder of the state, and state totals.

Next Generation Science Assessment data for independent charter schools include Achievement First, Beacon Charter School, Blackstone Academy, Blackstone Valley Prep Mayoral Academy, Charette Charter, The Compass School, Paul Cuffee Charter School, Davies Career and Technical School, Excel Academy, The Green School, Highlander Charter School, The Hope Academy, International Charter School, Kingston Hill Academy, The Learning Community, MET Career and Tech, Providence Preparatory Charter, RISE Prep Mayoral Academy, Rhode Island Nurses Institute Middle College, Segue Institute for Learning, Sheila Skip Nowell Leadership Academy, SouthSide Charter School, Trinity Academy for the Performing Arts, and Village Green Virtual.

UCAP is the Urban Collaborative Accelerated Program.

YouthBuild is the YouthBuild Preparatory Academy.

Core cities are Central Falls, Pawtucket, Providence, and Woonsocket.

NA indicates that the school district does not serve students at that grade level.

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